PARTIAL GASTRECTOMY.*

WITH REPORT OF TWO CASES.

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FOLLOWING close on the heels of the agitation in favor of the surgical treatment of appendicitis came the invasion of the surgeon into the therapeutic field in diseases of the biliary passages. It was not long after he had laid down certain surgical laws or principles governing the treatment of cholelithiasis and cholecystitis, that he began to encroach upon the territory of the internist and lay claims based upon pathological and clinical evidence to the right to treat the chronic dyspeptic. One is struck with the immense amount of surgical literature touching upon gastric surgery, that has appeared in journals during the past five years, and one would draw the conclusion that the general surgeon here and elsewhere saw and operated upon not an inconsiderable number of cases each year. In looking into the reports of five representative hospitals in Philadelphia for the year 1905, I was amazed at the paltry number of cases of gastric ulcer or gastric carcinoma that were tabulated in the surgical tables. There were, all told, about 30 cases of gastric ulcer, 1 duodenal ulcer and 14 cases of carcinoma. My own experience in gastric surgery during the past year has been limited to 10 cases, including 2 perforating wounds of the stomach, 4 cases of gastric ulcer, 1 of atonic dilatation, and 3 cases of carcinoma. This array of figures would seem to cast a reflection either on the surgeon or the internist, or both. The surgeon might be held to account if either in technique and dexterity or in his selection of cases the results were not such as to warrant the internist entrusting his patients to the surgeon's care. The published statistics do not seem, however, to bear out this theory. The fault seems to lie

* Read before the Philadelphia Academy of Surgery, March 4, 1907.

rather with the internist, either in his failure to recognize the existence of an ulcer as the disturbing lesion in the chronic dyspeptic or on his unwillingness to admit and take advantage of the permanent relief to be obtained by properly chosen and properly executed surgical procedures. In the out-patient department of one hospital there were 176 cases of so-called chronic gastritis and not one case of gastric ulcer treated in the wards, while in another there were 321 cases in the out-patient department, and but 4 ulcer cases treated in the medical and surgical wards. With the absolute superficiality and disregard of the modern methods of accuracy, so prevalent in the average dispensary service, is it not likely that some cases of chronic ulcer are overlooked and perhaps a greater number of cases of carcinoma unrecognized in the operable stage. To a certain but lesser extent the same is probably true of cases seen in private practice. If in weighing the evidence the surgeon is found reprehensible, it may be because, in his earlier experience, he was less discerning in his selection of cases and advised operations in cases in which the findings and the results proved the impropriety of such measures. Nothing has done more to discredit the gastrojejunostomy than its performance in cases of atonic dilatation of the stomach without pyloric stenosis. The patients suffering from this lesion are often of the neurasthenic type; many have had movable kidneys, if they have not already been anchored for the time being by one of the innumerable methods, or symptoms referable to the appendix or ovary if these have not already been removed.

The first of the cases in the report was a man fifty-four years of age. He was a lithographer by profession but attained greater notoriety and reputation as a professional foot-racer. He had never been addicted to the excessive use of alcohol or tobacco, and until the onset of his present illness he did not know what it was to be sick. About two years prior to his admission to the University Hospital his appetite began to fail and he began to lose weight. He complained at times of a good deal of pain after eating, and about eighteen months later he began to vomit. His condition became more and more aggravated until, when first seen, he

vomited after every meal; he had constant pain in the epigastrium and his weight fell from 150 to 98 pounds. It was noted in his clinical record that, among other things, he had signs of arteriosclerosis; his urine contained neither albumin nor casts, the hæmoglobin was 60 per cent., red blood corpuscles 4,080,000, and white blood corpuscles 10,720. From the analysis of the stomach contents it was reported that Oppler Boas bacilli were present, that there was no free hydrochloric acid or lactic acid, and a total acidity of 58. The stomach was somewhat dilated but there was no palpable mass. Despite some of the negative findings, the age of the patient, his emaciation, the duration of his illness, the presence of Oppler Boas bacilli led us to view the case as one of carcinoma of the pylorus, probably too far advanced to admit of more than a palliative operation.

The operation was performed October 24, 1906, under morphin-ether anæsthesia, with the patient in the reverse Trendelenburg position. Through a 3½-inch incision a little to the right of the mid-line the stomach was exposed and an extensive area of induration discovered in the pyloric portion of the stomach. There were two palpable lymph nodes in the greater and three in the lesser curvature. There were, however, no adhesions to surrounding structures and the lesion, still regarded as carcinoma, seemed especially suitable for a partial gastrectomy. The four vessels, two in the lesser and two in the greater curvature, were ligated, enough of the gastrocolic and gastrohepatic omentum was tied off to include the enlarged lymph nodes from the pylorus to the Mikulicz-Hartmann line. Clamps were applied to the duodenum and the stomach, the intervening tissue divided with a cautery knife, the respective ends of the duodenum and stomach closed with two layers of sutures and an anastomosis effected with the Murphy button between the posterior wall of the stomach and the jejunum (no loop gastrojejunostomy).

As after many of these operations, the patient's convalescence was remarkably short and free from any discomfort. On the fifth day he was sitting in a chair and on the eleventh day he left the hospital. When last examined, three months after the operation, he had gained 34 pounds; he had been entirely free from pain and had vomited but twice, and then after an indiscretion in diet.

Report from the Laboratory of Surgical Pathology.—Specimen No. 1159. The specimen consists of the pyloric portion of the stomach, on the

external surface of which there were a few small glands about the size of a pea, and numerous fibrous adhesions. The ulcer occupied the region of the pyloric ring, and here the mucous membrane was thickened and eroded. Histological sections of tissues from the base of the ulcer failed to show any evidence of new growth. The mucous membrane was seen to be the seat of an inflammatory process; there was a decided infiltration of leucocytes, distention of the blood vessels, and some free blood in the tissues. The inflammatory action extended into the submucous coat where the blood vessels were quite distended and the tissues hyaline in appearance, resembling chronic granulation tissue. The muscular coats were involved to a lesser extent in the inflammatory process. In the numerous sections examined it was impossible to demonstrate any evidence of malignant infiltration.

Upon hearing the pathological diagnosis the questions arose in my mind as to whether it would have been possible to have made a correct clinical diagnosis in this case and whether if the benign nature of the lesion had been known at the time of the operation some other procedure should have been adopted. I think it would have been quite impossible from the naked-eye appearance of the tissue, either before or after its removal, to have distinguished it from a malignant lesion. The ulcer belonged to the indurated class which, according to Mayo, predominate over the non-indurated in the proportion of 85 to 15; the dimensions of the lesion, furthermore, suggested malignancy; and the enlarged lymph nodes which were present, though associated sometimes with ulcer, are more constant in carcinomatous conditions.

As to the clinical history and findings, the duration of the lesion—two years—should have pointed rather to ulcer, as the average duration of carcinoma before the surgeon is consulted has been estimated at nine months. Vomiting is complained of in the majority of cases of cancer, as it would be in a benign pyloric stenosis, and emaciation is common to both. It has been shown by analysis of a large series of cases that too much reliance should not be placed in the clinical and gastric analysis of the stomach contents. Thus in a series of 67 examinations of test meals reported by Graham (*Boston Medical and Surgical Journal*, vol. clv, No. 8), in only 32 was there free hydrochloric acid, in 42 lactic acid and in 13 both lactic and

hydrochloric acid. In 10 cases no blood was found and in but 27, about one-third, could a tumor be felt before the operation. The absence of free hydrochloric acid, lactic acid or blood, and the absence of tumor did not preclude the possibility of the lesion being of a malignant nature. The lesson to be learned from these statistics is the danger of placing too much reliance upon what might be called the refinements of laboratory diagnosis. How many cases does the surgeon see in which the question of operation has been fatally deferred because what are regarded as the positive diagnostic features of carcinoma are absent either singly or collectively?

As to the surgical procedure which was adopted in this case, I am disposed to think that even had I known at the time of the operation that I was dealing with an ulcer, I would have performed a partial gastrectomy. Of the three possible operations—gastroduodenostomy, gastrojejunostomy or gastrectomy—the choice would rest between the two last, as the extent and seat of the lesion would have rendered the first impracticable. As between the gastrojejunostomy and pylorectomy, preference should have been given to the latter because of the danger of malignant degeneration. Though complete cicatrization might have followed a gastrojejunostomy, while this process was going on, or even subsequently the lesion might have undergone malignant ulceration. Observations at the Mayo clinic have made out a very strong case in favor of the relation of cause and effect between ulcer and cancer, despite the skepticism of the clinician or clinical pathologist. Thus, quoting again from Graham (loc cit.), in over three-fourths of their cases (79.5 per cent.) the pathological evidence was good (54 per cent.) or fair (25.6 per cent.). Taking the clinical histories together with the pathological findings, in over half the cases the combined evidence pointed to an ulcer as the lesion, upon which a carcinoma had been engrafted. If, therefore, "ulcer is the great and fertile soil of cancer," a strong argument may be advanced in favor of what appears at first sight the more radical procedure. As to the relative mortality, I doubt whether in benign conditions the mortality

following the excision of the pyloric portion of the stomach will be much, if any, greater than after gastrojejunostomy, and the expectation of life should be greater because the favorite seat and a common predisposing cause of carcinoma has been removed. Rodman (*Journal of the American Medical Association,* 1906, vol. ii, p. 842) found but one death in a series of 31 pylorectomies for ulcer in the hands of five surgeons.

The second of the two cases included in this report was a gastric carcinoma. The patient was fifty years of age. According to her statement she had not observed any trouble with her digestion till seven months ago. She then began to complain of pain in the epigastrium and soon to vomit one or two hours after meals. The subsequent course of events, taken together with the presence of an easily palpable tumor in the pyloric region, and the gastric analysis, all suggested carcinoma of the pylorus. As the tumor was movable and the patient's general condition good, the case seemed quite favorable for a radical operation, and when the stomach was exposed at the operation this proved to be the case. The tumor had not spread beyond the pyloric portion of the stomach wall and had invaded but few lymph nodes. Accordingly, a partial gastrectomy was performed, the tissue removed including 1 inch of the duodenum, all that portion of the stomach up to the Mikulicz-Hartmann line, and the palpable lymph nodes. As in the first case, a gastrojejunostomy was effected with a Murphy button.

The recovery from the immediate effect of the operation was as satisfactory as one would have hoped for. At the end of a week the patient was sitting up in bed, had not vomited since the operation, and relished the food on her dietary. Two days later, however, she began to vomit and to complain of gastric distress; there was a little distention of the abdomen, but no rigidity or tenderness. The bowels were very loose and did not respond to any internal medication. The temperature meanwhile had been normal. Twelve days after the operation the patient began to fail very rapidly and on the fourteenth day she died.

An examination post mortem discovered almost a complete separation of the line of union between the stomach and jejunum. The Murphy button had passed on some two or three feet beyond the site of anastomosis. This result was quite unlooked for, and

it was the first unfortunate experience which I have had with the Murphy button, in so far as concerned the union of the apposed surfaces. Whether it was due to some mechanical defect in the button or to imperfect blood supply of that portion of the stomach at which the button was introduced, is a matter only of speculation. Had I not taken steps to prevent separation by the introduction at intervals of three or four interrupted sutures around the button I should have attributed the accident to an error of technic. In both of my cases the same technic was followed; the steps of the operation corresponded to the method of Billroth, in which the stump of the duodenum is completely closed and an independent gastrojejunostomy is performed. In neither case were there any technical difficulties; the pyloric end of the stomach was easily isolated, the gastric and superior pyloric arteries on the lesser curvature and the gastroduodenal and the inferior gastro-epiploic artery on the greater curvature ligated. Care was taken to avoid the middle colic, since occlusion of this vessel causes gangrene of the transverse colon. Clamps were applied to the stomach and duodenum, the intervening portion resected and the operation concluded in the conventional way.

The diagnosis of cancer of the stomach has been touched upon briefly already; suffice it to make two remarks with reference to the presence or absence of tumors. First, that on no account should there be any delay in recommending operation or exploration because of the absence of the tumor, since in a very considerable number in the early stage no tumor can be detected. Secondly, that the presence of a palpable tumor does not preclude the possibility of a radical operation. A small tumor near the pylorus on the anterior wall may be felt quite early in the course of the disease when it is still in the operable stage, whereas a large posterior cancerous mass may not be palpable until long after the time when it might have been removed.

The selection of the operation for gastric carcinoma depends upon whether a radical or palliative operation may be indicated. At first the operative treatment of gastric carcinoma consisted chiefly in palliative gastro-enterostomies, because cases were not seen in the curative stage. The surgeon's

experience with this operation has been most disappointing, both as to the mortality and as to the expectation of life. The Krönlein, Mikulicz, and Mayo statistics show that the average prolongation of life is only five months and that the mortality is from 15 to 33 per cent. At best there is but one chance in seven of getting over the operation, and then but five months more to live. Despite this wretched showing, the surgeon is quite justified in advising the operation when the patient is suffering intense pain, vomiting persistently and starving to death. I operated upon a patient of this description a little over a year ago; he was in a most forlorn condition, suffering intensely and emaciated to a degree. He survived the operation a little over a year, but in the meantime his gastric symptoms had been relieved, his vomiting ceased, he gained weight and one day he was carried off with an apoplectic seizure.

As compared with the discouraging results after gastro-enterostomy, there is an increasingly brighter outlook for partial gastrectomy. The mortality is (Mayo) in some hands only 10 per cent., and 25 per cent. of the operative recoveries live more than three years. Of the three most common locations of carcinoma—the stomach, the breast and the uterus—the stomach from the operative standpoint is the most favorable. Eighty per cent. or more are in the pylorus; this portion of the stomach is easily removed and a rich vascular supply guarantees repair of the visceral wounds. Of still greater significance is the distribution of the lymph nodes. These are so arranged on the lesser and greater curvature that they all lie to the right of the Mikulicz-Hartmann line, and can be removed easily by including with the pyloric end of the stomach portions of the gastrohepatic and gastrocolic omentum. For this reason in the treatment of malignant disease the stomach, as compared with the uterus or breast, is a much more favorable organ for operative intervention.